Improving Food Security of Vulnerable Families Through Support to an Association of Women's Groups in North West Burundi

Award Number: AOT-G-00-00-00173-00

Final Narrative and Financial Report

3rd July 2000 to 28th February 2001

Submitted to:
US Agency for International Development
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List of Acronyms

CAD:	Children's Aid Direct
DAP	Diammonium phosphate
DPAE:	Department Provincial de l'Agriculture et de l'Elevage
Dufungure Neza:	The name of the umbrella association formed by participants of Children's Aid Direct's food security programme, meaning "Eat Well" in Kirundi, the local language.
FAO:	Food and Agriculture Organisation
FDN:	Foyer de Demonstration Nutritonnelle (Nutrition workshops)
FfW	Food for Work
IDPs:	Internally Displaced Persons
SFC:	Supplementary Feeding Centre
WFP:	World Food Programme

I. Executive Summary

Final Report

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Programme Title: Improving Food Security of Vulnerable Families Through Support to an Association of Women's Groups in North West Burundi

Co-operative Agreement/Grant No.: AOT-G-00-00-00173-00

Country /Region: Burundi – Bubanza Province

Disaster/Hazard: Complex emergency

Time period covered in this report: 3 July 2000 to 28 February 2001

This programme was funded in three phases. The initial award (AOT-G-00-98-00138-00) covered September 1998 to July 1999 whilst a costed extension was granted in June 1999 which funded activities between August 1999 to June 2000. This third phase of the project ran between July 2000 and February 2001 and was funded by a separate award (AOT-G-00-00-00173-00).

This report will focus on activities carried out during the third phase of the project and the resultant outcomes but will highlight the evolution from and linkages with the earlier phases of the programme.

Project Summary

During this third phase of the project three new womens groups were established. The activities they were involved in included restocking through provision of goat units, assistance with crop production, establishment of demonstration gardens and nutrition workshops (FDN).

In total there were twelve women's groups; three established under this phase of the project and nine previously established. Each contains between 100 and 180 members. The women work part-time for the Association and all produce and profits from harvests and income-generating activities are divided between the members of the groups.

Objective #1 To assist the target groups to increase agricultural crop production by 15% and ownership of livestock by 20%

Indicator and Current Measure.

15% increase in agricultural production compared to baseline data.

1 in five member's households will have livestock.

Achievement.

The value of household commodities has increased from between 11% to 93% depending on the group. All groups except Ngara showed the increase necessary to satisfy the objective.

Resources

Budget for Objective 1 $56,589 Expended: $36,146 Balance: $20,443

Objective #2 Promotion of sustainable land use techniques.

Indicator and Current Measure.

At end of project each site will have a demonstration plot of at least 0.2ha.

1 in 5 members adopting one new sustainable agricultural practice

Achievement.

The result of this activity were not as successful as envisaged.

Twelve plots were established at three groups, of smaller area than originally planned due to pressure on land use in family plots

Resources

Budget for Objective 2 $2,231 Expended:$355 Balance: $1,876

Objective #3 To improve the nutritional knowledge amongst 100% of the newly formed groups and women in the supplementary feeding programme.

Indicator and Current Measure.

Number of members participating in nutritional workshops

Percentage with improved knowledge.

Achievements.

All the members of the three newly established groups at Misigati II, Ruce and Rugazi have now received training in nutrition.

Resources

Budget for Objective 3 $6,888 Expended:$6,795 Balance: $93

Shared costs

Resources

Budget for shared costs $159,281 Expended$145,196 Balance: $14,085

*All figures include NICRA at 8.44%

II. Programme Overview

A. Programme Goal and Objectives.

Programme goal
To improve the food security of 1,450 IDP families with currently or previously malnourished children living in the province of Bubanza, Burundi, in a sustainable manner.

This project is implemented through women's groups. This is designed to increase efficiency and help develop community-based organisations that will provide support to their members and can represent them.

Programme Objectives.
1) To assist the target groups to increase agricultural crop production by 15% and livestock ownership by 20%.
2) Promotion of sustainable land use techniques. (agro-forestry, crop rotation, erosion control)
through training and setting up demonstration plots
3) Improved nutritional knowledge amongst 100% of members of newly formed groups and women in the supplementary feeding programme.

B. Profile of targeted population

For much of the past seven years the population of Bubanza has had the largest number of internally displaced people (IDPs) in the country, with until April 2000, approximately 154,000 people living in IDP camps. The subsequent period of insecurity prohibited this displaced population from returning to their homes, and the large numbers of IDPs living in camps resulted in high levels of competition for land to farm and employment opportunities. As a result, over the years prior to commencing this project there had been severely declining household food security for most of the displaced population.

The participants in this programme were women who, at the time the groups were formed, had a child or children receiving supplementary rations in a CAD feeding centre.

C. Geographic locations of all major programme activities

Country:	Burundi
First Admin. Unit:	Bubanza Province
Second Admin. Unit:	Mpanda – mill, poultry unit, agriculture, nutrition education Bubanza – mill, poultry unit, agriculture, nutrition education Musigati – agriculture, nutrition education Ninga – mill, poultry unit, agriculture, nutrition education Gihanga – poultry unit, agriculture, nutrition education Ruyange – mill, agriculture, nutrition education, demonstration gardens Ntamba – agriculture, nutrition education, demonstration gardens Ngara – agriculture, nutrition education Muyebe – agriculture, nutrition education Ruce – agriculture, nutrition education Rugazi – agriculture, nutrition education Musigati#2 – agriculture, nutrition education, demonstration gardens. *Agriculture includes: livestock units and seeds and tools support*
Latitude:	$3^{o}\ 10^{'}$
Longitude:	$29^{o}\ 25^{'}$

See Annex 1 for map of region and project area

Background and evolution of programme

Background

For much of the past seven years the population of Bubanza has had the largest number of internally displaced people (IDPs) in the country, with until April 2000, approximately 154,000 people living in IDP camps.

The subsequent period of insecurity prohibited this displaced population from returning to their homes, and the large numbers of IDPs living in camps resulted in high levels of competition for land to farm and employment opportunities. As a result, over the years prior to commencing this project there had been severely declining household food security for most of the displaced population.

In addition to the crisis caused by civil unrest, Burundi is also facing other more long-term problems caused by the following factors:

- Burundi has one of the highest population densities in Africa. With 85% of the active population employed in agriculture and a population growth of approximately 2.7% a year, there is increasing pressure on the available agricultural land and natural resources such as fuel-wood.

- The country's poor economic situation means that agricultural research and extension is limited. Inputs, including fertilisers and pesticides are prohibitively expensive for subsistence farmers, or unavailable. This, coupled with lack of organic manure caused by a decrease in livestock numbers, has lead to reduced productivity and increased exploitation of accessible land resulting in land degradation.

Many farmers in the region (including the project target group) have experienced difficulty in the past with producing sufficient harvests to satisfy their food requirements and/or have insufficient to keep as seed for planting the following season. This problem is therefore both acute and chronic. There is heavy reliance on food aid and seed distributions, and there are 11 Supplementary Feeding Centres (SFCs) for adults and children in the province.

Gender issues

The programme chose to target women because data from results of informal questionnaires conducted with three of the women's groups in Bubanza in December 1999 showed that 30% of the households were headed solely by women. This may be caused by many factors including the effect of the civil war in 1993 where the main casualties were male soldiers, but also by the social structure in the region. For example, the high cost of marriage means that the majority of men can only afford to marry after acquiring sufficient wealth, usually in their mid thirties. They also generally marry younger women who are in their early – mid twenties. The life expectancy in Burundi is 38 years for men and 42 years for women. Coupled with a birth rate of 6.6 births per mother, this means that women have older partners, give birth relatively young to large families, and because of the low life expectancy, can be widowed relatively early. This leaves the women relatively vulnerable to economic insecurity.

Traditionally land inheritance follows the male line, in practice this means that all farming decisions are made by the husband who also controls the disposal of the produce. When the husband dies his wife becomes the owner of the land as the head of the family. If there were no children it would return to her family.

Assets given to the men in the family remain the sole property of the men. When assets are given to women they become part of the family resources, so even though the women do not retain full control over the asset they retain a degree of control which improves their status in the family.

Traditionally, it is women who are responsible for family nutrition and food security. This includes food processing and marketing garden produce. The project is targeting women because they can have the greatest impact on household food security.

Spouses and the children of the women will benefit directly through improved nutrition. The spouses will also benefit indirectly as a number of them will also be employed in the project activities that are traditionally reserved for men, such as working the milling machines and construction.

Nutritional Status of the regional population
In 1997, CAD carried out a baseline health and nutrition survey in Bubanza Province that showed a global malnutrition rate of 19.5 % and severe acute malnutrition rate in children under five of 9.2%. CAD then set up SFCs and health centres to address this need. The survey in August 1999 found the rate at 12.75% and 4.44% respectively, and the latest survey in February 2000 found a level of 8.62% and 0.78% respectively.

The latest nutrition survey showed a significant increase in severe acute malnutrition to 2.2% whilst the global acute malnutrition rate remained relatively stable at 8.64%. The increase in the severe acute rate of malnutrition was reflected by an increase in the number of children in the supplementary feeding programme (2,699 in February 2000 and 4,457 in February 2001 - an increase of 65%)

Evolution of the programme.
In 1998 (Phase I of the programme) CAD started to address some of the underlying causes of malnutrition. One of these was identified as household food insecurity caused by the following problems:

- Limited access to land (80% women at the time had fields between 0.01 – 0.03 Ha);
- Lack of inputs (50Kg fertiliser presently costs $40, three times the price in neighbouring countries); and
- Lack of income to purchase food (mean family income in 4000 Fbu/month ($6.70) while price of the staple food, cassava flour, is 240Fbu/Kg).

The approach adopted in Phase I of the programme was to assist women through an association to increase both domestic food production and provide income generating opportunities. The programme assisted the associations to obtain land and then supplied the necessary inputs for crop production. CAD also started income generating activities, poultry houses and mills. In order to maximise the impact on the target population, the intervention worked through large groups of women, (over 100 per group), and provided funds to invest in capital intensive income generating activities that would generate a quick return. The main successes in phase one of the project was the mobilisation of 793 vulnerable women into 6 womens groups who between them produced 12.5MT of vegetables, 4.8MT of pulses, and 1.7MT of mixed staples and whose individual income increased by up to 22% (average 12.3%)

Phase II and III of the project, built upon the successes of phase I of the project and responded to a changing external environment. It also took into account problems encountered during the first phase of the project namely:-

- That large groups were unwieldy and difficult for the committees to manage,
- Large capital assets were also difficult for the committees to manage.
- The high value of the capital assets and the high cash turnover of the assets cause tensions within the groups.

As the security situation gradually improved in 1999 and 2000, it became more and more likely that the displaced population would be returning to their villages in the near future. Thus, subsequent interventions had to take these factors into consideration. Breaking the groups down into smaller sub groups (which corresponded to work units) both eased the management pressures and ensured that project benefits were transportable from the beneficiary's temporary residence to their home villages.

Results from the project over phases I and II demonstrated that increasing food and economic security can assist in reducing malnutrition. Figures from surveys show a relapse rate of 4.5 % for children whose mothers were in the association compared to 15% for children whose mothers are not in the association.

Criteria for participation in the programme

The participants in this programme were women who, at the time the groups are formed, had a child or children receiving supplementary rations in a CAD feeding centre.

Staff of the CAD food security and nutrition teams provisionally identified 100 mothers amongst feeding centre beneficiaries whose children were the most seriously malnourished. This data was available from records kept at each centre. Preference for participation was also given to women who had the least access to land. Further criteria included that each woman must be able and willing to undertake group tasks, such as fieldwork and meetings and be participating voluntarily.

There can be several hundred women and children attending each SFC centre at any one time, but the size of the association groups was limited to 100 individuals per group which were further broken up into up to 20 sub groups to carry out project activities. Originally there was no limit on the number of members and some of the existing groups have more than 100 members.

III. Programme Performance

- **Objective 1: To assist target groups to increase agricultural crop production by 15% and livestock ownership by 20%**

Indicator and measure for Objective 1

Indicator:
1. Increase in value of household agricultural commodities by 15%.
2. Number of livestock is increased so that by the end of the year, one in five association households will be successfully breeding small livestock such as rabbits, and one in five association households will keep at least one goat/pig or two chickens

Result: Indicator partially met
The value of household commodities has increased from between 11% – 93% depending on the group. All groups except Ngara showed the increase necessary to satisfy the objective. The increase since the start of the project is shown in Table 1.

Table 1. Quantity and value of harvest per member

Harvest per member			
Group	**Kg**	**✖Value Fbu**	***Increase from previous**
Musigati II	32.8	10,078	50%
Rugazi	12.3	5,478	27%
Ruce	22.3	6,223	31%
Bubanza	*20*	*9,125*	*45%*
Mpanda	*18.7*	*8,166*	*41%*
Ruyange	46.4	*18,601*	*93%*
Gihanga	*9.3*	*4,782*	*24%*
Ninga	*9.3*	*4,108*	*21%*
Musigati I	*21.6*	*8,379*	*42%*
Ngara	*6.8*	*2,254*	*11%*
Ntamba	*20.3*	*9,408*	*47%*
Muyebe	*15.0*	*7,131*	36%

✖*The value of harvest is combined for all crops and is based on the following local market prices (Fbu/Kg): Maize = 250; Soya = 440; Peanut = 875; Haricot = 400; Cassava = 350; Potato = 220*
For breakdown of harvest see Annexes 2 and 3
**When the population were confined to IDP camps the access to land was very limited and the mean harvest was 50Kg of haricot (not considering other lesser-grown crops). The value of this is 20,000 Fbu.*

Seven out of the 12 groups possess sufficient livestock to provide two animals per each five members, as shown in Table 2.

Table 2. Number and value of livestock (goats and pigs) and agricultural commodities per member for each group.

Livestock per member		
Group	**No. of animals**	***Value Fbu**
Musigati II	0.82	17,281
Rugazi	1.0	16,107
Ruce	0.77	21,000
Bubanza	0.43	15,050
Mpanda	0.34	9,560
Ruyange	0.37	9,250
Gihanga	0.51	12,391
Ninga	0.37	14,530
Musigati I	0.42	10,678
Ngara	0.47	16,780
Ntamba	0.39	10,367
Muyebe	0.37	9,738

Figures accurate to date of harvest in February 2001
**Based on the following local animal prices: Goats 21,000 Fbu; Pigs 22,000 Fbu*

Table 3. Combined value of a harvest and livestock per group

Group	**Value of group assets per member (Fbu)***
Musigati II	27,359
Rugazi	21,585
Ruce	27,228
Bubanza	24,175
Mpanda	17,726
Ruyange	27,851
Gihanga	17,173
Ninga	18,638
Musigati I	19,057
Ngara	19,034
Ntamba	19,775
Muyebe	16,869

**** 750 Fbu = $1***

1. Crop Production

Seeds were supplied to all the groups for season A 2001, and they were all able to harvest in February 2001.

Table 4. Harvest for A season 2001

	Total harvest for project groups	
Group (No. beneficiaries)	**Harvest in Kg (haricot, maize, peanut, soya and cassava)**	**Harvest (Kg) per member**
Bubanza (60)	1,200	20.0
Mpanda (75)	1,400	18.6
Ruyange (84)	3,900	46.4
Gihanga (46)	430	9.3
Ninga (83)	770	9.3
Musigati I* (118)	2,550	21.6
Ngara (59)	400	6.8
Ntamba (79)	1,600	20.3
Muyebe (80)	1,200	15.0
Musigati II (96)**	3,150	32.8
Rugazi (95)	1,170	12.3
Ruce (103)	2,300	22.3

**Musigati I group established in 1999*
***Musigati II group established in July 2000*

Production Level

Although the seed supplied was of high quality, there was a low level of harvest in many of the groups in relation to the land area planted and quantity of seed supplied. See Annex 2 detailing seeds supplied and related harvest.

Land Availability

Closing of the camps took place between March – July 2000 when beneficiaries were able to return to their own homes and land. During this period the area of land available to the beneficiaries increased considerably from 0.01 – 0.02 Ha (1-2 Are) at the start of the project within and around the camps, to areas up to 1.5 Ha of their own land. Access to communal land was still important however in order to provide security to families with limited land access of their own. Table 5 below shows the areas of communal land provided for the project beneficiaries.

Table 5. Communal land used by the association, represented as area per member

Group (No. members)	Area of land used by the groups Are*	Are/member
Bubanza (60)	240	4.0
Mpanda (75)	300	4.0
Ruyange (84)	380	4.5
Gihanga (46)	140	3.0
Ninga (83)	300	3.6
Musigati I (118)	360	3.1
Ngara (59)	200	3.4
Ntamba (79)	400	5.1
Muyebe (80)	300	3.8
Musigati II (96)	225	2.3
Rugazi (95)	400	4.2
Ruce (103)	325	3.2

** 100 Are = 1 Ha*

Communal land for season A 2001 was provided either by the Department of Agriculture (DPAE), the local administration or one of the members of the groups for rent to established groups, or free of charge for the new groups at Musigati, Ruce and Ruyange. Land rent is between 7,000 – 20,000 Fbu/Ha ($10 - $30) depending on the quality of the land. Money for this land rent was deducted by the groups from the sale of their harvest.

Seeds, Tools and Fertilizer

The project has distributed 308 hoes (Table 6) and mixed seeds (soya, maize, haricot, peanut and vegetables) to the Association and provided training and advice on crop production. See Annex 2 for a table of seeds supplied and harvests for association crops.

Seeds supplied by CAD have been purchased from ISABU (Institute des Semences Ameliores du Burundi) or the national vegetable seed research centre (Projet Maraichere) in Bujumbura. It is hoped that the groups will retain some of their seed for planting in the following season so maintaining the improved quality.

The groups still have problems obtaining commercial fertilizers, which are expensive and not readily available. CAD continues to provide these until the animal units are well enough established in the new groups for manure to be collected. Several of the established groups have already begun collecting manure from their association animals and using it on their own fields.

Table 6. Distribution of inputs to the groups.

	Inputs provided		
Group (No. members)	**Hoes**	**DAP***	**Urea**
Bubanza (60)		100Kg	
Mpanda (75)		50 Kg	
Ruyange (84)			100 Kg
Gihanga (46)			
Ninga (83)			
Musigati I (118)			
Ngara (59)		100 Kg	
Ntamba (79)		150 Kg	100 Kg
Muyebe (80)		50 Kg	
Musigati II (96)	108	200 Kg	100 Kg
Rugazi (95)	100	50 Kg	
Ruce (103)	100	100 Kg	

*DAP Diammonium phosphate

Problems encountered and action taken:

Low production levels could be due to several factors:

- *Harvest estimation*

Seeds are sown as a mixed plot, normally containing maize, haricot bean, soya, sweet potato and peanut. It is therefore difficult to estimate the exact area per crop and the yield per area. There is also the problem of inaccurate recording of the harvests or under-use of the seed supplied.

Harvests are gathered gradually over a period of days and portions of the produce may be sold, distributed directly or stored according to the preference of the group. It is therefore very difficult for the groups and CAD field staff to collect accurate harvest data. CAD has supplied weighing balances to each of the groups to enable them to more accurately record weights of harvest rather than relying on subjective measures such as sack or basket loads. The balances are, however, not always available at specific sites when needed. Some of the groups may also be underestimating their harvests in order to encourage further support from CAD.

- *Land quality*

Quality of the land has sometimes been poor (as in Bubanza in season A 2000) and this has led to a lower than expected harvests.

- *Rainfall*

There was heavy rainfall through Season A 2001, which caused destruction of crops in the plain area due to flooding and loss of seeds and seedlings due to erosion in the mountainous areas of Ngara and Ntamba.

- *Group organisation*

As well as physical factors affecting crop production, there are also issues associated with the groups themselves. Working on community land does not give the responsibility for the field maintenance to any particular individual and since no particular person benefits from the harvest the incentive to increase production is low. Communal work is also susceptible to "free-riders" - people who as part of the group are eligible to a share of the benefits, but who contribute less than their share of labour. Also, if security is reasonably good and the women have sufficient access to their own land to allow them to grow crops, the incentive to work together and increase production on community land is low.

Evaluation recommendations:

In response to the consultant's evaluation report (see annexed report), the following recommendations were made as a possible means to address the problem of low yield.

1. Increase range of crops produced

It has been noted that root/tuber crops such as cassava, sweet potato and cocoyam regularly provide good yields, which can be explained primarily by their relative resistance to unfavourable weather conditions. Assisting the groups to increase production of these crops will therefore provide a valuable insurance crop for periods of unfavourable weather. However, it will be difficult to abandon the cultivation of protein-rich crops such as beans and maize as this is the only source of dietary protein for the majority of small farmers in the region. There are therefore two possibilities:

- To increase production of these root/tuber crops with the aim of providing income from their sale to purchase protein-rich crops which have been grown elsewhere.
- To attempt to increase production of protein-rich crops by providing security seed to allow the crops to be re-sown if necessary after seedling loss due to drought or excess rain.

2. Double the quantity of seed supplied.

If the seed quantity is doubled, the following will need to be considered:

- Half the seed will be saved and stored in case it is needed as a second planting, however storing seed makes it liable to theft or damage.
- The seed may be sown on double the field area, but this will make all the seed susceptible to the same risk of loss due to weather damage. It will be difficult to decide exactly at which point the risk of crop loss is low enough to allow the spare seed to be sold, or used elsewhere. If this seed is kept for sufficiently long time until the threat has passed then it may be too late for it to be sown elsewhere by the group or the community. The most practical option will be to double the quantity of land, and at the same time select land in different locations to reduce the risk of loss. This however, is difficult as land is in demand and in the mountainous areas all the land is liable to the same risk of erosion in heavy rain.

Livestock Production

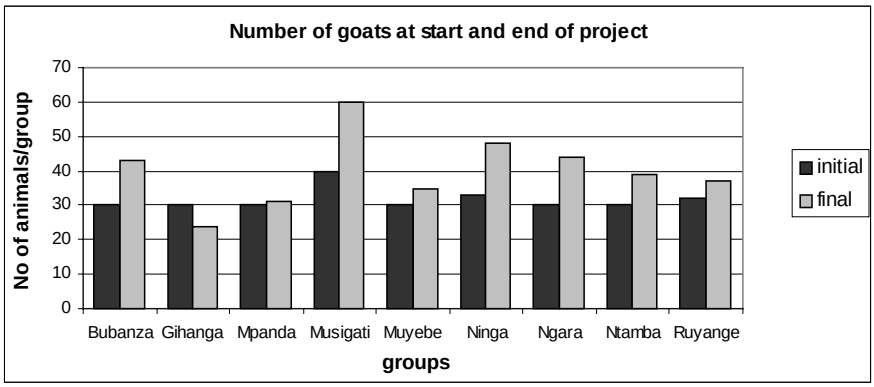
All the groups now own some livestock. Reproduction and survival rates vary depending on the type of livestock and the capability of the groups to care for their animals. The table below shows the situation for all the groups.

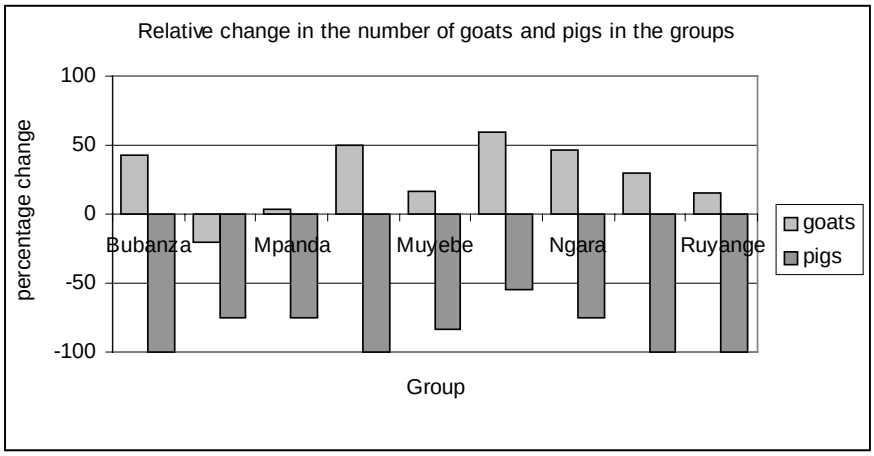
Table 7. Initial and final numbers of animals per groups provided through the project

Group site	Animal	Total No. animals given	No. births to date	Mortality and thefts	No. animals to date (Feb 2001)
Ruce	Goats	79	0	0	79
Rugazi	Goats	95	0	0	95
Musigati II	Goats	79	0	0	79
Muyebe	Goats	30	10	5	35
	Pigs	12	0	10	2
Ntamba	Goats	30	16	7	39
	Pigs	12	0	0	12
Ngara	Goats	30	20	6	44
	Pigs	12	0	9	3
Bubanza	Goats	30	16	3	43
	Pigs	12	0	12	0
	Chickens	140	0	46	94
Musigati I	Goats	40	25	5	60
	Pigs	20	0	20	0
Gihanga	Goats	30	6	12	24
	Pigs	12	0	9	3
	Chickens	120		26	94 *
Ninga	Goats	33	17	2	48
	Pigs	20	0	11	9
Mpanda	Goats	30	8	7	31
	Pigs	12	0	9	3
Ruyange	Goats	32	14	9	37
	Pigs	12	0	12	0

*these animals have been taken by the members to their own homes.

Figures 1 & 2. Relative number of animals per group at the start and end of the project (Not including new groups as the livestock was only distributed in Jan 2001)





Problems encountered and action taken

- ***Management of units***

All the groups have received training in basic animal health and hygiene. The project also employs a local veterinary nurse to assist the groups to manage their livestock, to provide treatment and to offer advice on disease prevention. Some groups including Ruyange, Mpanda, Gihanga and Ninga were however, still experiencing outbreaks of preventable disease, in particular contagious ecythma and theilerose, leading to illness or death of livestock. To overcome this problem the project decided to recruit two community veterinary assistants to provide field support to the veterinary nurse. This personnel change was approved by OFDA in November 2000 . This intervention had the desired impact at most of the locations except in Ruyange where the problem of lack of basic hygiene and minor ailments in goats still persisted and towards the end of the project plans were being made to increase the number of visits to this site in the hope that this would allow the problem to be identified and a solution to be found.

- ***Location of units***

Sites for the new animal units for the groups of Ruce, Ruyange and Rugazi were chosen by the groups. In the case of Rugazi the units are mainly located on the site of the IDP camp which still exists in part today because of insecurity in the area. One problem associated with the decision to build on the IDP site is the lack of suitable land at the site and the time taken to negotiate for use of available land. Construction of the units at this site was therefore delayed.

- ***Health of livestock***

Table 8. Main diseases/illnesses affecting association livestock

Animal	Main health problems
Goats	Contagious ecthyma Conjunctivitis Theilerose Intestinal worms Bronchopneumonia
Pigs	Peste porcine Salmonellose Dermatitis Injuries Intestinal worms
Chickens	Typhose Newcastle disease Coccidiose Respiratory infections

Successive national outbreaks of *peste porcine* have killed the many local pigs. The pigs belonging to the groups are kept in pens to reduce their physical contact with other animals that may carry the disease but this was insufficient to prevent high numbers of mortalities occurring. Without proper control measures being put in place to prevent the movement of infected animals, to diagnose the problem and to isolate healthy animals, this problem is likely to persist. The existence of many different strains of this virus mean that vaccination is not ideal and resistance to infection is transitory.

The problem of Newcastle's disease in poultry also continued. It was decided to replace all the 30 proposed poultry units with goats units in order to supply the beneficiaries with more hardy livestock. This was approved by OFDA in November.

- ***Procurement of Livestock***

Procurement of disease free livestock was an ongoing problem during this project. The continuing outbreak of *peste porcine* in Bubanza resulted in abandoning the procurement and distribution of pigs to the beneficiaries. This was not an easy decision to take as in most cases pigs were the preferred livestock of the women. Likewise much effort was expended in trying unsuccessfully to source locally adapted poultry that had been vaccinated against Newcastles disease.

Recommendations from the consultant's report

1. Replace all pigs in the programme with goats to prevent loss from predicted *peste porcine*.
2. In the future replace all chickens with ducks

If these recommendations are to be accepted then the following will need to be considered.
Isolated groups such as Ruce have, to date, not had a severe problem with *peste porcine*. This may however be due to the low numbers of pigs in the area and the relative isolation that discourages transport of animals from outside the region. The women in these groups were still keen to receive pigs and CAD was willing to provide them on condition that the group followed all the recommended hygiene procedures to reduce risk of contamination.

In order to make the project participatory CAD spent considerable time developing a relationship with the groups and discussing their needs. All the groups asked for a range of livestock, in particular pigs, which

because of their high reproduction rates represent a valuable asset. This created a dilemma in that given the heavy loss of livestock CAD was not willing to provide pigs to all the groups and by doing this we were going against the wishes of the group. It must be noted that over the period of 9 months some of the groups have lost 10/12 of their pigs and are most likely going to lose the remaining animals. CAD therefore recommended that the groups sell their surviving pigs and replace them with goats, which have a higher chance of survival. Only one group was willing to do this. There appeared to be a great amount of pressure on the groups to keep their pigs even though the chances of survival were very low.

- **Objective 2 Promotion of sustainable land use techniques**

Indicator and measure for Objective 2

Indicators:
1. At the end of one year each site will possess at least a 0.2 Ha horticultural demonstration plot

2. A 'Knowledge, Attitudes and Practices' survey will be conducted at the start and end of the programme.

3. Field observations during the end of project evaluation will indicate whether the sustainable land use techniques are being implemented.

4. Surveys will show that at least one in five of association members have adopted at least one new practice in their own fields that has been demonstrated to help improve crop yields, maintain soil fertility and reduce erosion.

Results: The results of this project were not as successful as envisaged.

Twelve plots were established but of smaller area than originally planned due to pressure on land use in family plots.

A knowledge, attitude and practice assessment was carried out with a small sample (5 – 10) of the women in each of the groups with demonstration gardens. The results indicated that after seeing the demonstration gardens and participating in discussions with the gardeners and CAD staff, the women questioned were now aware of at least one beneficial practice. This was the main benefit of having a nursery plot and it's construction and placement. (see annex 4).

It was not possible to carry out this survey for an entire group because many women were now living some distance from the demonstration sites and were not available for interview. When questioning farmers, who were not part of the DN groups but who were cultivating land adjacent to the demonstration site, the reaction to the sites were positive and many said they were interested to see what was happening in the demonstration fields. This is a positive response and shows that the beneficial practices may be able to diffuse slowly from the demonstration garden via the adjacent farmers to the wider community.

Due to logistical problems in reaching all the sites the project was amended to provide 12 demonstration plots in three of the groups instead of one plot per group. This was accepted by OFDA but did not require a formal grant modification.

Vegetable seeds including tomato, lenga lenga, cabbage, aubergine, onion, leek and pumpkin were distributed to the groups along with soya, peanut, maize and haricot.
The variety of vegetable seed was provided to:
- Allow the gardeners to grow a mixture of household food: lenga lenga together with cash crops such as onions, leeks etc. to spread risk and increase diversity.
- To encourage, by demonstration, the cultivation of nutrient-rich crops that are not normally produced (cabbage for example).
- To demonstrate the various techniques for cultivating these vegetables.

The seed was purchased from a vegetable institute in Burundi and was of high quality.

Problems encountered and action taken

The size of the plots varied with land available at the particular site and how much the women felt they could donate to the project. In general, the plots were smaller than expected, between 0.01 Ha and 0.04 Ha. The members also mixed the seed provided with their own crops to give a wide range of crop mixtures. Composting took place on all the sites but its maintenance had to be consistently encouraged. Though popular with development workers, composting tends not to be popular with farmers who see it as a lot of work for little tangible benefit.

CAD did not use the plots for formal training. However it was noted that women in the groups, and also farmers cultivating adjacent fields, did visit the gardens and were aware of the practices being displayed. This was especially apparent in the Musigati area where the women questioned in the group said they had seen that seedlings had been planted in rows and were shaded, a practice that is not presently followed by the women on their own land. Owners of land adjacent to the demonstration plots were questioned about what practices they had learnt from the demonstration. The activity which raised the most attention was the nursery demonstration.

In order to assess the impact of the project it will be necessary to follow the groups for a further season to see if any of the practices are physically adopted by women in their own fields. As the project finished in February 2001 there is, unfortunately, no opportunity to follow individual members or the groups into the next season.

The fact that all produce from the gardens will be kept by the plot owner may be an incentive to manage the plots to a higher standard that if the plots where on DPAE land.

Table 9. Inputs provided per garden

	Input	No.
Musigati	Hoes	4
	Watering cans	4
	Sprayers	1
	Shovels	4
Ntamba	Hoes	8
	Watering cans	4
	Sprayers	2
	Shovels	4
Ruyange	Hoes	8
	Watering cans	4
	Sprayers	1
	Shovels	4

Two fruit tree seedlings of each of mango, avocado, citrus and paw-paw were distributed to the gardens.

It was not possible to set up tree nurseries on demonstration plots as wished. To enable this activity to be effective it would have had to start as soon as the project began in July/August. However, the plots were not established until after the first couple of months of the project and it was by then too late to start the work on the tree nurseries. To save some time and to provide good demonstration, CAD purchased fruit tree seedlings for planting in the demonstration gardens.

It was planned that the DPAE were to play an active role in the running of the demonstration gardens. Although DPAE extension staff know of the gardens and their purpose they did not have any input into this project. This is thought to have been due to lack of incentives.

Training has been provided to the gardeners on the choice and placement of seedling beds, layout of the nurseries, composting techniques, and identification of crop diseases and pest symptoms.

- **Objective 3 - To increase nutritional knowledge**

Indicator and measure for Objective 3

Indicator: Increase in nutritional knowledge and improved use of food for 100% of the newly formed groups (300 members), and women participating in the Supplementary Feeding Programme.

Results: A Knowledge, Attitude and Practice survey was carried out pre- and post-training. 30 to 40% of pre-test results were correct, whilst between 90 and 94% of post training responses were correct. (see annex 5 for pre and post training results)

All the members of the three newly established groups at Musigati II, Ruce and Rugazi have now received training in nutrition. The impact of the project can be seen by a reduction in the number of children within the group receiving supplementary food rations at a CAD SFC.

Table 10. Percentage of children in the new DN groups who are still registered as malnourished in a CAD supplementary feeding centre.

		Percentage of children with malnutrition	
Group	Number of malnourished children per group	Start of project (July 1999)	End of project (Feb 2001)
Musigati II	126	100%	4.76%
Rugazi	141	100%	5.67%
Ruce	132	100%	1.51%

Many of the mothers stated that the cause of their child's malnutrition was due to illness that affected appetite and caused weight loss of the child or the mother. In the latter case this affects the mother's ability to care for the child/children particularly if she is breast-feeding at the time. Predominant illnesses in the region include malaria and flu.

Table 11. Dates of FDN training

Group	Training dates
Musigati II	09 Oct 2000 – 21 Feb 2001
Rugazi	09 Oct 2000 – 23 Feb 2001
Ruce	16 Oct 2000 – 22 Feb 2001

Before training can begin, the groups have to be formed and organised. This involves training and sensitisation on group collaboration, selection of committees and formulating statutes. This is why the FDN training did not begin until October.

Problems encountered and action taken:

There were three main problems associated with this activity:

1. The precarious security situation meant that training schedules were continuously changing and at times either CAD staff were not able to visit the sites or the women were not able to attend if they had to travel from a distance. Normally training is carried out at each site in turn in order to provide a degree of consistency both in the training and logistics (for example, food purchasing can be done once a week in

bulk for use during the whole week, rather than purchasing small quantities of food on a daily basis). However, this was not possible for the last few months of the project and training took place at each of the sites for 1 – 2 days per week. This meant training took a longer time to complete and lost some of its continuity.

2. As many of the IDP camps closed at the start of the project, the women were occupied with reinstallation into their own homes and were therefore unwilling to donate long periods of time to the FDN training workshops.

3. Since time was lost due to security problems, it was necessary to continue the training up until the end of the project for all the groups. This meant that the normal 3-month post -training assessments were not completed.

Other Programme Activities

Mills

Although not part of the current project, the mills from award AOT-G-00-98-00138-00 continue to function with varying degrees of success and provide an income to the groups.

Table 12. Mill income gross per month (Fbu)

Group	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Totals	*Means
Ninga	29,260	21,010	17,440	67,710	0	0	0	?	135,420	**19,345**
Ruyange	21,450	79,805	88,395	150,840	104,770		85,200	?	530,460	**75,780**
Mpanda	1,213	67,550	72,250	41,460	0	0	0	?	182,473	**26,067**
Bubanza	0	17,415	0	7,230	0	15,500	12,615	?	52,760	**7,537**

**Mean is for 7 months as information was not able to be collected for February2001 due to insecurity in the project area.*

Women's Association

Training

The greatest problems encountered with providing training was the women's lack of availability and the high number of training courses run by the different parts of the project. At one point we were trying to hold sessions on nutrition, livestock management and sustainable land management as well as holding group meetings on income generating activities and problem solving within the groups. It was obvious that the women were reaching training/meeting "saturation". Generally, participation in these activities was good (particularly with the new groups) and the women seemed to have a genuine interest and desire to learn more and be active in the group work. However, it is understandable that some areas, such as sustainable land management, featured very low on the women's priorities and training related to this was poorly attended.

Training held during project

- **Nutrition training** 10 days nutrition and food preparation as well as hygiene, infant food preparation and family planning for every women in all groups
- **Livestock management** Written course on general health, nutrition and welfare of goats, pigs and chickens.
- **Management of income generating activities**
- **Sustainable land use**: Demonstration gardens

Miscellaneous activities

The project has monitored market prices for food products in Bubanza market every week since the project began in 1998. These can be compared with prices for the same items gathered by FAO in Bujumbura central market. Changes in the prices of produce over time helps assess the availability of locally produced food over the seasons and calculate the price of a family food basket.

CAD also works with WFP and FAO to carry out distribution of emergency seed and seed protection rations. The general food security situation and areas of specific need are identified through food security surveys carried out once a year by CAD in collaboration with the DPAE. WFP also carry out regional surveys each season and collaborate with CAD and the DPAE to identify areas which have localised problems such as crop loss caused by drought, and in the other extreme, crop damage caused by hail at higher altitudes.

IV. Resource use / expenditures

Please see attached Federal Cash Transaction Reports.

The budget as a whole was underspent by $36,496. As detailed in the report this was largely due to the problems of animal disease which prevented us from buying all the livestock originally planned for. Other factors were also at play such as less interest than hoped for in the sustainable land use techniques objective and periods of insecurity during the project period that limited activities.

Conclusion

The general conclusion from the consultant's report was:
"The food security programme has contributed to the improvement of nutrition of families of women who are members of the groups and that the children in these families are not prone to re-entering the supplementary feeding centres".

Summary of conclusions

Successful project activities included:
- The FDN
- Vegetable production and goat rearing. Neighbouring families outside the groups also benefited from exchange of information. These activities should be intensified in the future and when new sites are created these activities should be transferred.

Limitations on the project were as follows:
- Climatic factors causing a drop in production.
- *Peste porcine* epidemics in pigs.
- Illness, such as malaria, which affect the ability of the group members to carry out group work.
- Atmosphere of insecurity leading to theft from fields and houses.
- Newcastle disease affecting chickens
- Lack of organisation within the groups due to loss of confidence with the committees. This paralyses the group's ability to function.
- Insufficient monitoring of animal health, leading to prevalence of preventable diseases and ailments.

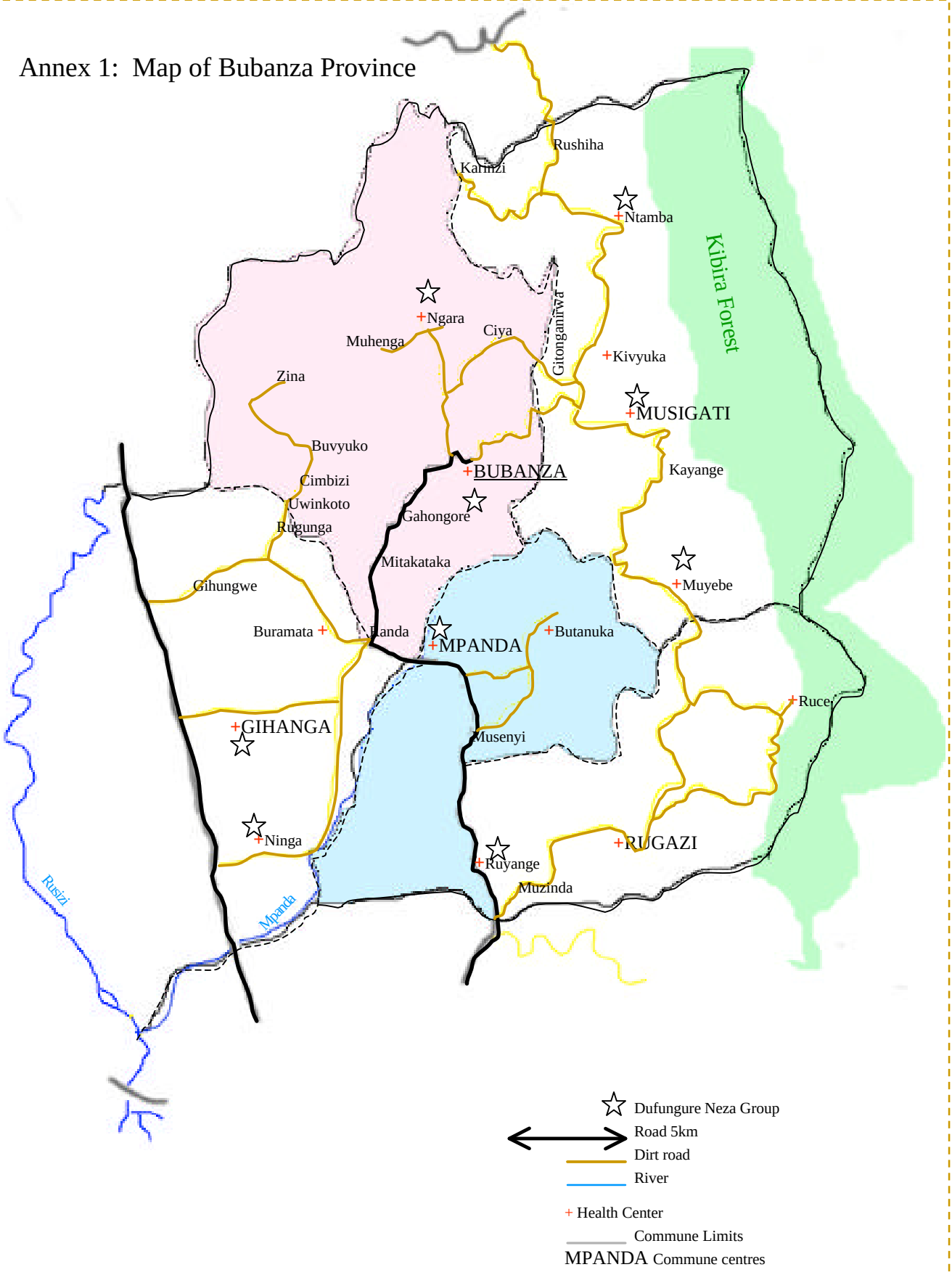
Solutions proposed are:
- Develop/encourage the cultivation of root/tuber crops
- Introduce rice cultivation to selected groups, particularly on the plain in Mpanda and Ruyange where they have access to irrigation.
- Intensify the cultivation of soya in the higher regions of Mumirwa and Mugamba and contemplate introducing soya processing as an income generating activity.
- Intensification of potato cultivation and storage in the Mugamba region.
- Introduction of peas in the Mugamba region.
- Introduction of anti-erosion techniques and agro-forestry in susceptible areas.
- Intensify vegetable production in all groups as this is a valuable source of income for the groups and families.
- Continue to provide training for the groups in management of mills.
- CAD will need to continue to assist the groups with their activities.
- CAD should encourage the groups to buy their own land in order to increase their independence by allowing them to manage the fields as they would like. This would enable and encourage the groups to invest time and effort into the maintenance of anti-erosion practices.

Future prospects

This programme was designed and implemented at a time of acute need for much of the rural population of Bubanza caused by insecurity, displacement and loss of entitlements. The approach was to provide resources to allow vulnerable farming families to improve their household food security, and to mobilise the displaced community *en mass* to maximise the programmes impact in the short term.

The underlying situation in Bubanza has changed markedly in the last year, the security situation has improved and the administration has made efforts to encourage the displaced population to return home. However the food security situation still remains tenuous for most of the rural population. Small land holdings, high population densities, low yielding agricultural technologies, limited opportunities to generate an income off farm, low levels of education, inadequate health care provision and so on, all work to keep the bulk of the population in poverty, with a percentage being prepared to resort to violence to improve their situation. Long term stability will best be achieved by reducing poverty, thorough long term strategies aimed at allowing people to realise their potential

Annex 1: Map of Bubanza Province



Annex 2.

Seeds distributed for season A 2001 and harvests for each group.

Site	Ngara				Ntamba				Muyebe				Musigati				Ruyange				Bubanza			
	Don	harv	area		Don	Harv	area		Don	harv	area		Don	harv	area		Don	harv	area		Don	harv	area	
	Kg	Kg	Ha	Kg/Ha	Kg	Kg	Ha	Kg/Ha	Kg	Kg	Ha	Kg/Ha	Kg	Kg	Ha	Kg/Ha	Kg	Kg	Ha	Kg/Ha	Kg	Kg	Ha	Kg/Ha
Haricot	60	220	1	220	60	450	1	450	60	300	0.75	225	60	300	1	300	60	250	1	250	60	400	0.8	320
Maize	40	180	1	180	40	500	1	500	40	400	0.75	300	40	500	1	500	40	250	1	250	40	500	0.8	400
Peanut					60	350	1	350	60	300	0.75	225	60	250	1	250	60	400	1	400	60	300	0.8	240
Soya					60	300	1	300	60	200	0.75	150									60	?	?	
Rice																								
Sorgum																								
Potato																								
manioc														1500	0.6			3000	0.8					
peas																								
sub total	100	400	2		220	1600	4		220	1200	3		160	2550	3.6		160	3900	3.8		220	1200	2.4	
tomato																	0.1							
lenga lenga																								
aubergine																	0.1							
onion					0.1								0.05											
cabbage					0.1								0.1											
carrots																								
sub total					0.2								0.15				0.2							
totals	100	400	2		220	1600	4		220	1200	3		160	2550	3.6		160	3900	3.8		220	1200	2.4	

Site	Ninga				Gihanga				Ruce				Rugazi				Musigati #2				Mpanda			
	Don	harv	area		Don	Harv	area		Don	harv	area		Don	harv	area		Don	harv	area		Don	harv	area	
	Kg	Kg	Ha	Kg/Ha	Kg	Kg	Ha	Kg/Ha	Kg	Kg	Ha	Kg/Ha	Kg	Kg	Ha	Kg/Ha	Kg	Kg	Ha	Kg/Ha	Kg	Kg	Ha	Kg/Ha
Haricot	60	240	1	240					60	300	1	300	60	350	1	350	60	350	1	350	60	500	1	500
Maize	40	350	1	350	40	250	0.7	175	40	500	1	500	40	400	1	400	40	500			40	600	1	600
Peanut	60	180	1	180	60	180	0.7	126					60	220	1	220	60	300	1	300	60	300	1	300
Soya									60	300	1	300	60	200	1	200								
Rice																								
Sorgum					0		0																	
potato									500	1200	0.25	300					500	2000	0.25	500				
peas																								
Sub total	160	770	3		100	430	1.4		660	2300	3.25		220	1170	4		660	3150	2.25		160	1400	3	
tomato	0.1																							
lenga lenga																								
aubergine																								
onion	0.1								0.1				0.1				0.05							
cabbage									0.1				0.1				0.1							
carrots																								
sub totals	0.2								0.2				0.2				0.15							
Totals	160	770	3		100	430	1.4		660	2300	3.25		220	1170	4		660	3150	2.25		160	1400	3	

All vegetable seeds were distributed amongst the women for their own family plots due to lack of available community land.

Pea seed (see quarterly report Sept - Dec 2000) was not provided to the groups in the end because of the problem finding sufficient land

Annex 3

Harvest by groups for season A 2001 and value of harvest

Site	Ngara				Ntamba				Muyebe				Musigati I				Ruyange				Bubanza			
	Don	harv	area	Value	Don	harv	area	Value	Don	harv	Area	Value	Don	harv	area	Value	Don	harv	area	Value	Don	harv	area	Value
	Kg	Kg	Ha	Fbu	Kg	Kg	Ha	Fbu	Kg	Kg	Ha	Fbu	Kg	Kg	Ha	Fbu	Kg	Kg	Ha	Fbu	Kg	Kg	Ha	Fbu
Haricot	60	220	1.0	88,000	60	450	1.0	180,000	60	300	0.8	120,000	60	300	1.0	120,000	60	250	1	100,000	60	400	0.8	160,000
Maize	40	180	1.0	45,000	40	500	1.0	125,000	40	400	0.8	100,000	40	500	1.0	125,000	40	250	1	62,500	40	500	0.8	125,000
Peanut					60	350	1.0	306,250	60	300	0.8	262,500	60	250	1.0	218,750	60	400	1	350,000	60	300	0.8	262,500
Soya					60	300	1.0	132,000	60	200	0.8	88,000									60	?	?	
Rice																								
Sorgum																								
Potato																								
manioc														1,500	0.6	525,000		3,000	1	1,050,000				
peas																								
totals	100	400	2.0	133,000	220	1,600	4.0	743,250	220	1,200	3.0	570,500	160	2,550	3.6	988,750	160	3,900	4	1,562,500	220	1,200	2.4	547,500

Site	Ninga				Gihanga				Ruce				Rugazi				Musigati #2				Mpanda			
	Don	harv	area	Value	Don	harv	area	Value	Don	harv	Area	Value	Don	harv	area	Value	Don	harv	area	Value	Don	harv	area	Value
	Kg	Kg	Ha	Fbu	Kg	Kg	Ha	Fbu	Kg	Kg	Ha	Fbu	Kg	Kg	Ha	Fbu	Kg	Kg	Ha	Fbu	Kg	Kg	Ha	Fbu
Haricot	60	240	1.0	96,000					60	300	1.0	120,000	60	350	1.0	140,000	60	350	1	140,000	60	500	1.0	200,000
Maize	40	350	1.0	87,500	40	250	0.7	62,500	40	500	1.0	125,000	40	400	1.0	100,000	40	500		125,000	40	600	1.0	150,000
Peanut	60	180	1.0	157,500	60	180	0.7	157,500					60	220	1.0	192,500	60	300	1	262,500	60	300	1.0	262,500
Soya									60	300	1.0	132,000	60	200	1.0	88,000								
Rice																								
Sorgum																								
potato									500	1,200	0.3	264,000					500	2,000	0	440,000				
peas																								
Sub total	160	770	3.0	341,000	100	430	1.4	220,000	660	2,300	3.3	641,000	220	1,170	4.0	520,500	660	3,150	2	967,500	160	1,400	3.0	612,500

Annex 4

Evaluation des jardinières sur les connaissances en matière des techniques culturales Sur le maraîchage.

1. Introduction.

Dans le cadre de promouvoir la culture maraîchère, le programme de Sécurité alimentaire a identifié des jardinières pilotes. Nous avons ensuite prévu une formation sur les techniques culturales (depuis le choix de l'emplacement d'une pépinière jusqu'à la récolte) qui sera basée sur des démonstrations pratiques. Nonobstant, avant de dispenser cette formation, une enquête préliminaire était indispensable pour avoir une idée précise du degré des connaissances de ces techniques dans le but d'identifier les besoins prioritaires pour cette formation.

C'est dans ce cadre que l'évaluation des jardinières qui a été préparée et conduite dans trois endroits à savoir Musigati, Ntamba et Ruyange trouve sa justification.

2. Déroulement de l'évaluation.

L'évaluation a été conduite dans trois endroits à savoir MUSIGATI, NTAMBA et RUYANGE.
Pour chacun de ces endroits, 4 jardinières ont fait l'objet de cette évaluation. Elles étaient propriétaires des jardins de démonstration.

2.1. MUSIGATI.

Concernant les critères de choix d'emplacement d'une pépinière, les jardinières avancent un seul critère qui est celui d'un endroit fertile et que pour le labour, il faut labourer normalement.
Pour le matériel nécessaire, elles citent les houes et les machettes seulement.
Pour les travaux d'entretien d'un jardin potager, elles mentionnent l'arrosage et le sarclage.
Quant aux maladies fréquentes pour les cultures maraîchères, elles mentionnent les insectes et les chenilles. Concernant le fumage, les légumes doivent être plus fumées que les cultures vivrières parce qu'elles sont plus exigeantes en fumure.

Pour le semis en ligne, tout le monde déclare n'avoir jamais pratiqué cette technique. Quant à la consommation des légumes, elles disent que l'avantage c'est qu'elles contiennent des vitamines. Pour les légumes qu'elles cultivaient avant il s'agit de choux, de tomate et des oignons. Pour le mélange de la fumure organique et minérale, elles disent qu'elles n'ont jamais fait cette pratique parce qu'elles ne peuvent pas trouver la fumure minérale.

Pour l'arrosage, elles disent que ça se fait en trois temps à savoir matin, midi et soir.
Concernant le temps que durent les légumes dans les pépinières, elles disent que c'est un mois et demie. Pour les fruits qui sont cultivés, les jardinières citent l'avocatier, le papayer et manguier. Signalons que sur 4 jardinières, seules 2 ont affirmé avoir ces fruits.

2.2. NTAMBA.

Concernant les critères de choix d'emplacement d'une pépinière, les jardinières citent deux à savoir:
- un endroit plat
- un endroit fertile

Pour labourer le terrain, elles disent que c'est un labour normal comme pour les autres cultures. Quant au matériel nécessaire pour l'entretien des jardins, elles citent les houes et les machettes seulement.

Pour le semis en ligne, tout le monde accepte qu'il n'a jamais pratiqué cette technique.

Concernant les ombrières, elles savent qu'elles protègent les petits plants contre le déssechement et contre l'excès des pluies. Concernant les travaux d'entretien, elles citent l'arrosage et le sarclage. Quant aux maladies fréquentes pour les cultures maraîchères, elles donnent les insectes et les chenilles seulement. Pour le fumage, elles disent qu'on doit fumer parce que les légumes sont très exigeantes en fumure mais elles affirment qu'elles n'ont jamais mélangé la fumure organique et minérale par suite de manque de cette dernière. Concernant l'installation d'un compost à coté d'une pépinière, elles disent qu'elles n'ont jamais pratiqué cette technique. Quant à la consommation des légumes, elles savent que quand elles en consomment , il y a un apport de vitamines. Pour les arbres fruitiers, 1 sur 4 accepte qu'elle en possède. Là aussi, il s'agit d'avocatiers (2). Concernant la durée des plants dans une pépinière, elles disent que c'est deux mois alors que c'est un mois.

2.3. RUYANGE.

Concernant les critères de choix d'emplacement d'une pépinière, les jardinières citent 2 à savoir:

- Endroit plat
- Endroit fertile

Pour le labour, elles disent que c'est unlabour normal comme pour les autres cultures. Quant au matériel nécessaire pour la conduite d'une pépinière, elles citent les houes, les machettes et les râteaux. Concernant l'aménagement d'une pépinière, pour elles, ilse limite à bien faire les plates bandes. Pour le semis en ligne, les jardinières déclarent qu'elles n'ont jamais pratiqué cette technique. Pour les ombrières, elles savent qu'elles protègent les plants contre le déssechement et contre l'excès des pluies mais elles disent qu'elles ne sont pas habituées à cette technique. Concernant les travaux d'entretien, elles disent qu'il s'agit de l'arrosage et de sarclage. Quant aux maladies fréquentes pour les légumes, elles citent les insectes et les chenilles. Pour le fumage des jardins potagers, elles disent qu'il faut le faire parce que les légumes sont très exigeantes en fumure. Pour le compost à coté d'une pépinière, elles disent qu'elles ne sont pas habituées à cette technique. Elles ajoutent également que c'est tout à fait noveau pour elles. Pour la consommation des légumes, elles disent qu'on les consomme pour gagner des vitamines. Concernant le mélange de la fumure organique et minérale, elles comfirment que cette pratique est nouvelle pour elles. Concernant le nombre de fois qu'on fait l'arrosage, elles disent que c'est trois fois (matin, midi et soir) alors que c'est deux fois (matin et soir). Elles disent que les plants durent 1,5 mois dans une pépinière alors qu'ils durent 1 mois. Quant aux fruits cultivés chez-elles, elles citent l'avocatier, le manguier, le papayer et l'oranger. Soulignons que sur 4 jardinières faisant objet d'évaluation, 2 seulement affirment avoir possédé ces fruits cités ci-haut.

3. Interprétation des résultats.

Les discussions mnées au cours de l'entretien avec les jardinières qui ont fait l'objet d'évaluation nous ont permis de dégager les résultats suivants:

1 Le choix de l'emplacement d'une pépinière et le labour pour préparer une pépinière sont maîtrisés à 50 %. Ce constat a été réalisé suite aux réponses qui ont été dégagées par les jardinières de tous les endroits. En effet, concernant les critères de choix d'emplacement, elles soulignent qu'il faut que ça soit un endroit plat et fertile alors qu'il fallait ajouter d'autres critères notamment un endroit près d'eau et près du lieu de transplantation, etc…

2 Le matériel à utiliser dans une pépinière est connu de 70 % parce qu'elles citent seulement les houes, les machettes et les râteaux alors qu'il y a d'autres outils comme la brouette, pelles, trident, etc….

3 Les techniques d'aménagement d'une pépinière ne sont pas du tout maîtrisées par les jardinières. En effet, d'après les discussions ménés avec ces dernières, il ressort que l'aménagement des plantes-bandes, le semis en ligne, le paillage, la construction des clôtures, le compostage et l'ombrage ne sont jamais pratiqués dans leurs champs. Cela porte à confirrmer que ces techniques sont à 100% ignorées.

4 Les maladies fréquentes pour les légumes se limitent seulement aux insectes et aux chenilles pour les jardinières alors qu'il en existe beaucoup d'autres notamment le mildiou, bactériose, etc.…

Cela montre que les jardinières accusent des lacunes quant aux maladies. Elles sont connues de 30 %.

5 Les fruits qui sont cultivés sont les mêmes pour les jardinières qui en possèdent. Il s'agit notamment de l'avocatier, du manguier, du papayer et un peu d'oranger. Soulignons tout de même que ces ffruits ne sont pas suffisants parce que sur 12 jardinières enquêtées, seules 5 affirment avoir possédé ces fruits (42%).

6 Les fruits sont très peu cultivés et ils ne sont pas très variés.

En définitive, toutes ces conlusions tirées nous ont permis d'identifier le degré des connaissances et les lacunes qu'ont les jardinières en ce qui concerne la culture maraîchère. Cette évaluation nous aura également permis d'identifier les thèmes prioritaires sur lesquels nous insisterons pendant les séances de formation qui seront organisées pour ces jardinières.

Annex 5 Nutritional knowledge pre and post training results.

RUCE

For RUCE, there were 6 groups. Each group was about between 17 and 20 members. For pre-test and post-test, a sample of 5 members by group was chosen.

The results are in the table below:

Name	Pre-test	Post-test
Marie Therese	2/10	8/10
Yollande	2/10	10/10
Theodore	4/10	10/10
Marguerite	2/10	10/10
Sylvie	2/10	9/10
Theodore (2)	4/10	10/10
Sylvane	3/10	10/10
Rose	4/10	10/10
Severa	3/10	9/10
Floride	3/10	9,5/10
Pascasie	2/10	9/10
Rose	3/10	10/10
Janviere	4/10	9/10
Rose	3/10	10/10
Calinie	3/10	9/10
Pelagie	2/10	10/10
Generose	3/10	9/10
Ndabarushimana	2/10	10/10
Benoite	3/10	9/10
Seraphine	4/10	9/10
Jacqueline	4/10	10/10
Caritas	3/10	10/10
Genevieve	4/10	10/10
Euphrasie	3/10	9,5/10
Suavis	3/10	9/10
Cesarie	3/10	10/10
Renilde	4/10	9/10
Anastasie	2/10	9,5/10
Marie	3,5/10	9,5/10
Rose	3/10	10/10

MUSIGATI.

At MUSIGATI, the process is the same as at RUCE and there are also 6 groups.

The results are in the table below :

Name	Pre-test	Post-test
Marie Therese	2/10	10/10
Gaudence	3/10	10/10
Anna	2/10	9/10
Capitoline	3,5/10	8/10
Monique	3/10	9,5/10
Rene	3/10	10/10
Constance	2/10	9/10
Marguerite	3/10	10/10
Nadine	4/10	9/10
Nadine (2)	2/10	10/10
Louise	3/10	10/10
Marie	3,5/10	9/10
Therese	2/10	9,5/10
Marie (2)	2/10	10/10
Rosette	3/10	10/10
Lydia	4/10	10/10
Jovite	3/10	10/10
Madeleine	2/10	10/10
Jeanine	4/10	9/10
Consolate	3/10	8/10
Francine	4,5/10	10/10
Yvette	5/10	10/10
Lewi	3/10	9/10
Aline	4/10	10/10
Speciose	3/10	9/10
Euphrasie	2/10	10/10
Immaculée	4/10	9,5/10
Nicelatte	2/10	9/10
Marie	3/10	10/10
Dorothée	3,5/10	10/10

RUGAZI.

For RUGAZI, the process is the same as at RUCE and MUSIGATI but we had 5 groups only of 20 members each.

The results are in the table below :

Name	Pre-test	Post-test
Romaine	4/10	10/10
Marie	3/10	10/10
Marie-chantal	2,5/10	9,5/10
Domitille	3/10	10/10
Angele	3/10	10/10
Domitille	4/10	10/10
Dominique	3/10	10/10
Devote	2,5/10	9,5/10
Speciose	3/10	9/10
Olive	2,5/10	10/10
Jovite	5/10	10/10
Lea	5/10	10/10
Susanne	3/10	10/10
Christine	2/10	9,5/10
Godelieve	3/10	9/10
Immaculée	4/10	10/10
Stephanie	2/10	10/10
Sylvane	4,5/10	10/10
Emeryne	4/10	9/10
Jeanette	3/10	9/10
Marguerite	5/10	10/10
Marie	4/10	10/10
Leocadie	3/10	9,5/10
Jacqueline	2,5/10	9/10
Marie Goreth	4,5/10	10/10